DOCUMENT RESUME

ED 131 311 CE 008 964

AUTHOR	Holcomb, John W.; And Others
TITLE	Employment Opportunities and Training Needs in Agribusiness. Competencies for Horse Production in the United States.
INSTITUTION	Texas A and M Univ., College Station. Dept. of Agricultural Education.
SPONS AGENCY	Texas Education Agency, Austin. Div. of Occupational Research and Development.
REPORT NO	VT-103-296
PUB DATE	Aug 75
NOTE	50p.; Pages 37 through 39, containing illustrations for parts of the horse, ideal stock horse conformation, and a student activity, will not reproduce well due to faintness of photographs
EDRS PRICE	MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS	Agribusiness; *Agricultural Education; *Agricultural Production; Animal Science; Curriculum Planning; *Horses; *Job Analysis; *Job Skills; Research; Task Analysis

ABSTRACT

Competencies necessary for entry and advancement in horse production were determined by a survey of 46 people in the horse production industry from the nine leading horse production states other than Texas. A preliminary listing of competencies was developed from a review of the literature and a survey of leaders in agricultural education. The 46 respondents in the horse production industry rated each specific competency in terms of the relative importance associated with employability at the entry and first advancement levels. Responses were summarized in table form, indicating the number of responses for each degree of relative importance, the number not responding, and the weighted mean for each duty, general competency, and specific competency. The relative importance of 167 specific competencies and five general competencies for horse production were rank ordered with the weighted mean given for each. Appendixes contain membership lists of the advisory and validating committees, the number of respondents from the ten leading horse production states, a rank order of horse production duties with component general competencies rank ordered within the duty, and examples of curriculum materials developed to support a single horse production specific competency statement. (NJ)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED131311

EMPLOYMENT OPPORTUNITIES AND TRAINING NEEDS IN AGRIBUSINESS

COMPETENCIES FOR HORSE PRODUCTION

THE DEPARTMENT OF AGRICULTURAL EDUCATION

TEXAS A&M UNIVERSITY

John W. Holcomb
Herman D. Brown
James E. Christiansen
William E. Hudson

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Substantial funding for this project was supplied by Texas Education Agency through its Division of Occupational Research and Development in a contract with Texas A&M University, Project No. 52350152.

Concurrent work in competency identification for agribusiness is in progress in other states in a coordinated national effort. Information concerning the coordinated effort may be secured from Dr. David R. McClay, Professor Emeritus, Department of Agricultural Education, The Pennsylvania State University, University Park, Pennsylvania 16802, who serves as chairman for the national effort, or from H. Neville Hunsicker, Office of Education, U.S. Department of Health, Education, and Welfare, Washington, D.C. 20202.

August, 1975

CE 008 964

VT 103 296

THE NATIONAL EFFORT

A national committee made up of representatives from four federal departments addressed itself in 1968 to defining and identifying agribusiness occupations and the industries in which they are located. This effort involved the cooperation of many individuals within the four departments, from many of the states and from the private sector industries involved in agribusiness.

Six years later, in September, 1974, the effort resulted in the publication by the Economic Research Service of the United States Department of Agriculture an ERS 570 series entitled EMPLOYMENT IN AGRICULTURE AND AGRIBUSINESS OCCUPATIONS. The base data employed were those of the 1970 Census of Population of the U.S. Bureau of the Census. The eight categories of competencies in use by the U.S. Office of Education were utilized to identify those occupations and industries requiring agricultural competence. The agribusiness sector thus identified consisted of 108 occupations and 201 industries from the CLASSIFIED INDEX OF INDUSTRIES AND OCCUPATIONS of the Bureau of the Census.

The national committee identified six major objectives. One of those was to "Identify skills, competencies and training needed for current and future employment in agribusiness occupations." As an approach to this formidable task, representatives of agricultural education of the nation met in Columbus, Ohio in May, 1974 where each state represented was requested to accept responsibility for competency identification for one or several of the occupations previously identified.

Texas accepted responsibility for competency identification in the production of cotton and the production of horses. This document is a part of the work done in the discharge of that responsibility.

THE PROJECT STAFF

While four staff members of the Department of Agricultural Education of Texas A&M University participated formally in the work herein reported, it should be noted that sustained daily effort and much of the project detail were performed by William E. Hudson, Research Associate for the Project.

The project staff wishes also to identify additional internal support efforts from Dr. Earl H. Knebel in administering the project, from Dr. Earl S. Webb in his function as research coordinator for the Department, from Dr. Jay Grimes in the area of identification and statement of competencies, and from graduate assistants Tom Grady and Craig Morton for valuable assistance during peak activity periods.

ACKNOWLEDGEMENTS

The project staff acknowledges with gratitude the assistance requested of and rendered by several individuals and groups during the progress of this project.

.....Oscar Millican of the Division of Occupational Research and Development, Texas Education Agency, for advice and constructive suggestions.

.....Staff members of the Department of Animal Science, Texas A&M University, for review and comments leading to first revision of a tentative listing of competencies.

.....J. A. Marshall, Director, and G. G. Scroggins, Assistant Director of Agricultural Education, Texas Education Agency, for consultation throughout the project and for assistance in the identification of personnel for advisory committee members.

.....Area Supervisors and Consultants of Agricultural Education, Texas Education Agency, for assistance in the identification of advisory committee and validating committee members for Texas.

.....Charles Palmer, Subject Matter Specialist, Vocational Instructional Services, Texas A&M University, for consultation in horse production and assistance in publication.

.....Vocational Instructional Services, Texas A&M University, for the example of curriculum materials development based upon compentencies included as an appendix to this report.

.....Nine state directors of agricultural education in other states for assistance in identifying appropriate personnel for national validation.

.....Members of two advisory committees representing the industry for services without compensation to identify and to validate competencies for Texas. Members are listed elsewhere in this publication.

.....Representatives of the industry in nine states other than Texas for examining and responding to listings of competencies in the process of national validation.

INTRODUCTION

Rapid redirection of programs of agricultural education is in progress in the United States. A realization of the need for educational programs to provide manpower requirements for occupations requiring agricultural competence is rapidly being translated into programs and curriculums to meet the needs without regard to the location of the occupation. It has been established that agricultural competence is required in 201 industries rather than five bearing upon agricultural production, forestry and fisheries. At the same time, educational planners accept identification and analyses of the competencies required in each occupation to be viable approach to curriculum development.

So vast was the need for competency identification in the occupations and industries identified by a national study and published in August, 1974 by the Economic Research Service of the United States Department of Agriculture* that it was quickly apparent that no one school system nor indeed one state could accomplish the entire mission. Beginning in June, 1973 planning began to distribute the responsibility among the several states, and in May, 1974 at a national meeting in Columbus, Ohio, a majority of the states of the nation accepted responsibility for specific competency identificaiton.

Representatives from Texas accepted responsibility for competency identification in the production areas of cotton and horses.

*Employment in Agricultural and Agribusiness Occupations, Economic Research Service, United States Department of Agriculture, in cooperation with Bureau of the Census, U.S. Department of Commerce; Office of Education, U.S. Department of Health, Education, and Welfare and Manpower Administration and Bureau of Labor Statistics, U.S. Department of Labor; Series ERS-570; August, 1974.

TABLE OF CONTENTS

The National Effort ii

The Project Staff ii

Acknowledgements iii

Introduction iv

Table of Contents v

List of Tables vi

Purpose of the Study 1

Definition of Terms 1

Basic Assumptions 2

Limitation 2

Research Procedure 3

Findings 6

Selected References 25

Appendices

Appendix A 26

Appendix B 29

Appendix C 31

Appendix D 34

Appendix E 40

LIST OF TABLES

Table No. 1. Weighted Means Derived from Responses of 46 Horse Producers in 9 States to 5 Categories of Relative Importance for 167 Specific Competencies, *44 General Competencies*, and *11 Duties* for Horse Production 7

Table No. 2. Rank Order of 167 Specific Competencies and 5 Independent *General Competencies* for Horse Production 18

Purpose of the Study

The primary purpose of this study was to determine from industry the competencies necessary for entry and advancement in horse production. A secondary purpose was to interpret data from Texas and national manpower studies with implications for program planning in agricultural education which includes up-dating of training and employment needs in Texas Agribusiness. The results should lead to better knowledge of the competencies that should be taught in vocational agriculture programs involved in training students for employment in horse production. Results of interpretation of manpower data would provide more realistic estimates of the demand for employees that need agricultural skills and competencies to perform their job. In order to achieve these purposes the following specific objectives were developed as guidelines for conducting the research:

1. Identify competencies in horse production required at the entry and first advancement levels of employment.

2. Refine and validate competencies in horse production.

3. Interpret data on employment and training needs in agribusiness.

4. Up-date the employment and training needs in Texas agribusiness from data supplied by USOE, U.S. Department of Agriculture, U.S. Department of Labor, and the U.S. Bureau of the Census through the National Committee on Employment and Training Needs in Agribusiness.

5. Publish a final report for submission to the Texas Education Agency and disseminate copies to states through reciprocity.

Definition of Terms

To facilitate understanding and utilization of the findings of this

study, the following definitions were used:

Duty - A large segment of work performed by an individual. It is one of many major activities performed as part of a job. Each duty is made up of several segments. An example of a duty is "controlling parasites, diseases, and injury."

General Competency - A major subdivision of a duty. An example of a general competency is "apply sanitation and health practices."

Specific Competencies - A subdivision of a general competency. This is usually a discrete work unit having a specific beginning and ending point. An example of a specific competency is "check temperature, pulse, and breathing rate."

Basic Assumptions

The following basic assumptions were made in planning and conducting the study:

1. Members of the advisory and validating committees were representative of the horse production industry.

2. Respondents for the national validation phase were representative of the horse production industry.

3. Specific competencies are fundamental elements used in developing a curriculum for horse production.

4. Specific competencies are logical parts of a general competency.

5. General competencies are logical parts of a duty and are useful as a means of grouping specific competencies.

6. Duties listed are logical subdivisions of the horse production industry and are useful for grouping general competencies.

Limitation

The findings of this study were subject to the following limitation:

The study was limited to the information obtained from responses on questionaires from producers in 9 of the ten leading horse producing states.

Research Procedure

The review of relevant literature through use of a computer search initiated the project. The citations of (1) the Bibliography of Agriculture from the National Agriculture Library and (2) the Research in Education, Current Index to Journals in Education, and the Abstracts of Instructional Materials subfiles of the Educational Resources Information Center of the National Institute of Education were reviewed by computer search. Leaders in agricultural education were surveyed by letter to locate relevant material not included in the computer search. Copies of useful material were obtained for review and possible inclusion in the competency list.

Specialized personnel in the Department of Animal Science assisted with developing the preliminary listing of competencies for horse production. Specialists in horse production met with project personnel 3 times to discuss competencies to be included in the competency list. The experience and expertise of the selected specialists and the input from the literature were combined to formulate a competency list for horse production.

Staff members of the Agricultural Education Division, Texas Education Agency, identified several people who were qualified to serve on the advisory and validating committees for horse production. Advisory committee members (Appendix A) were selected from the list of nominees and met once on the Texas A&M University campus to evaluate the competency list. The advisory committee added some competencies, deleted other competencies, and revised competency statements to make the preliminary list more relevant.

Following the advisory committee meeting the project staff revised the

competency list and submitted it to the advisory committee members by mail for review. Additional comments and suggestions were solicited to insure that the project staff had made revisions according to the advisory committee recommendations. The competency list was refined according to the suggestions made by the responding advisory committee members.

Members of the validating committee (Appendix A) were selected from those persons remaining on the list of nominees. The committee met on the Texas A&M University campus for validation of the refined competency list for horse production. The validating committee reviewed the list and made suggestions for improvements. Committee members were asked to rate each specific competency for horse production in terms of relative importance associated with employability at the entry and first advancement levels of employment.

The project staff incorporated the suggested changes into the competency list and compiled results of the relative importance judgements. These were then mailed to members of the validating committee for additional comments. The final draft of the competency list used for the national validation phase resulted from utilizing the suggestions made by the validation committee members.

State directors of agricultural education in 9 of the ten leading states in horse production (Appendix B) were asked to identify for each state ten outstanding members of the horse production industry to serve as a national validation committee. Questionaires were mailed to those people so identified. Nonrespondents were sent a followup letter urging them to complete the survey. Those not responding to the followup were sent another questionaire and were again asked to complete and return the instrument.

Forty-six people in the horse production industry from nine states other

than Texas returned questionaires. The respondents rated each specific competency for horse production in terms of the relative importance associated with employability at the entry and first advancement levels of employment. The degree of relative importance and definitions for each as approved by the National Committee for Identifying competencies in Agricultural Occupations follow:

Essential - Of utmost importance; competence in performing this task is absolutely necessary for entry level employment.

Important - Competence in performing this task has much influence or effect on employability.

Of Some Importance - Competence in performing this task has some influence on employability.

Not Important - Competence in performing this task has no effect on employability.

Does Not Apply - Task does not apply to the occupation cluster.

A 5 point scale was used to score the respondents' responses. The scale used for tabulation was:

4 = essential

3 = important

2 = of some importance

1 = not important

0 = does not apply

A weighted mean was then calculated for each specific competency to help determine the overall relative importance of each competency. The highest possible weighted mean was 4.00 with the lowest possible weighted mean being 0.00. The weighted mean was calculated from the responses of respondents who actually checked a degree of relative importance for specific competency

statements.

The weighted mean for each general competency was calculated by summing the scores for the specific competencies and dividing by the sum of respondents for the specific competencies constituting the general competency. Likewise, the weighted mean for each duty was calculated by summing all scores for specific competencies and dividing by the sum of respondents for the specific competencies constituting the duty. Appendix C lists the duties in rank order with the component general competencies rank ordered within each duty.

Findings

Table No. 1, page 7, summarizes responses of forty-six people in the horse production industry from 9 states other than Texas. Noted on the table are the number of responses for each degree of relative importance, number of people who did not respond, and the weighted mean for each duty, general competency, and specific competency. Due to a deficiency in the questionaire instructions, which apparently implied to some respondents that only specific competencies should be marked, too few people responded to the duty and general competency statements to provide meaningful data. Therefore, the data presented for general competencies are an extrapolation of all responses for the specific competencies constituting the general competency. The data presented for each duty are, likewise an extrapolation of all responses for the specific competencies comprising the duty.

Specific competencies are fundamental elements used in developing a curriculum for horse production. It is essential, then, that curriculum developers incorporate those competencies deemed most important to employability into the curriculum. The decision to include or not to include a specific competency in the curriculum is based on many inputs, one of

which is the relative importance of each competency considered along with the time available for instruction.

Table No. 1. Weighted Means Derived from Responses of 46 Horse Producers in 9 States to 5 Categories of Relative Importance for 167 Specific Competencies, *44 General Competencies*, and *11 Duties* for Horse Production.

Duties,* *General Competencies*,** and Specific Competencies***	Relative Importance						Weighted Mean
	Essential	Important	Of Some Importance	Not Important	Does Not Apply	Did Not Respond	
I. Classifying and Selecting Horses	*142*	*188*	*205*	*94*	*10*	*5*	*2.56*
A. Identify the major breeds of horses by classes and types.	*9*	*20*	*32*	*25*	*5*	*1*	*2.03*
1. Compare and contrast riding horses, racehorses, and light harness horses.	7	17	16	6	0	0	2.54
2. Compare and contrast draft horses and mules.	2	3	16	19	5	1	1.51
B. Determine age, weight, and height.	*12*	*22*	*66*	*35*	*2*	*1*	*2.05*
1. Determine age of horse by examining teeth.	4	11	20	10	0	1	2.20
2. Apply the use of a balance scale for determining weight of a horse.	2	6	22	15	1	0	1.85
3. Measure horse's body to determine height and weight.	6	5	24	10	1	0	2.11
C. Judge horses.	*50*	*57*	*55*	*21*	*1*	*0*	*2.73*
1. Recognize physical characteristics (general anatomy) important to use.	20	15	11	0	0	0	3.20
2. Evaluate physical characteristics important to breeds and classes.	13	18	12	2	1	0	2.87

*Duties are identified by Roman numerals. Data presented was calculated by summing all scores for those specific competencies constituting the duty.

**General Competencies are identified by capital letters. Data presented was calculated by summing all scores for those specific competencies constituting the general competency.

***Specific competencies are identified by Arabic numerals. Data presented is the summary of responses by the 46 respondents.

(Table No. 1, cont.)

Duties,* General Competencies,** and Specific Competencies***	Relative Importance						Weighted Mean
	Essential	Important	Of Some Importance	Not Important	Does Not Apply	Did Not Respond	
3. Identify classes of a horse show.	9	10	17	10	0	0	2.39
4. Apply rules of horse show classes.	8	14	15	9	0	0	2.46
D. Select horses.	*71*	*89*	*52*	*13*	*2*	*3*	*2.94*
1. Recognize physical characteristics (general anatomy) important to use.	21	14	10	1	0	0	3.19
2. Recognize inherited and acquired soundness and unsoundness in horses.	28	12	5	1	0	0	3.46
3. Evaluate pedigree.	7	23	12	3	1	0	2.70
4. Evaluate performance and show-ring winnings.	6	17	14	7	1	1	2.44
5. Discuss the importance of a veterinarian soundness examination.	9	23	11	1	0	2	2.91
II. Feeding Horses	*189*	*231*	*120*	*29*	*4*	*25*	*3.00*
A. Calculate nutritive requirements of horses.	*53*	*80*	*29*	*10*	*4*	*8*	*2.95*
1. Determine protein needs of the different classes or types (sex, age, and use) of horses.	15	19	7	2	1	2	3.02
2. Determine energy needs of the different classes or types (sex, age, and use) of horses.	13	21	7	2	1	2	2.98
3. Determine mineral needs of the different classes or types (sex, age, and use) of horses.	14	19	7	3	1	2	2.95
4. Determine vitamin needs of the different classes or types (sex, age, and use) of horses.	11	21	8	3	1	2	2.86
B. Evaluate sources of feed nutrients.	*56*	*64*	*47*	*9*	*0*	*8*	*2.95*
1. Identify forms of feed nutrients from available roughages.	14	18	10	2	0	2	3.00
2. Evaluate feed nutrients from available roughages.	14	16	12	2	0	2	2.95
3. Identify forms of feed nutrients from available concentrates.	15	14	13	2	0	2	2.95

(Table No. 1, cont.)

Duties,* General Competencies,** and Specific Competencies***	Relative Importance						Weighted Mean
	Essential	Important	Of Some Importance	Not Important	Does Not Apply	Did Not Respond	
4. Evaluate feed nutrients available from available concentrates.	13	16	12	3	0	2	2.89
C. *Prepare feed rations.*	*40*	*48*	*34*	*7*	*0*	*9*	*2.94*
1. Formulate rations using economical ingredients.	14	14	13	2	0	3	2.93
2. Select and purchase feeds to be used in the ration.	14	17	8	4	0	3	2.95
3. Mix feeds.	12	17	13	1	0	3	2.93
D. *Feed horses.*	*40*	*39*	*10*	*3*	*0*	*0*	*3.26*
1. Recognize role of social order in feeding horses.	16	21	6	3	0	0	3.09
2. Apply feeding practices.	24	18	4	0	0	0	3.43
III. *Managing Pastures*	*70*	*196*	*127*	*45*	*4*	*18*	*2.64*
A. *Improve pastures.*	*42*	*134*	*92*	*36*	*3*	*15*	*2.57*
1. Describe characteristics of grasses and legumes.	7	20	15	2	0	2	2.73
2. Compare grasses and/or legumes adapted to local area.	6	23	13	2	0	2	2.75
3. Select area to be improved.	5	21	16	3	0	1	2.62
4. Select grasses and/or legumes best adapted to your soil conditions.	7	22	10	5	1	1	2.64
5. Take soil samples.	6	13	14	10	1	2	2.30
6. Interpret soil test results specifically for pasture production.	4	15	13	9	1	4	2.29
7. Establish selected grasses and/or legumes.	7	20	11	5	0	3	2.67
B. *Use pasture.*	*28*	*62*	*35*	*9*	*1*	*3*	*2.73*
1. Select grazing system.	9	20	12	3	1	1	2.73
2. Maintain fertility and stand.	12	19	11	4	0	0	2.85
3. Identify and control unwanted plants.	7	23	12	2	0	2	2.80
IV. *Controlling Parasites, Diseases, and Injuries*	*285*	*250*	*59*	*18*	*11*	*21*	*3.25*
A. *Apply sanitation and health practices.*	*138*	*112*	*21*	*2*	*0*	*3*	*3.41*

(Table No. 1, cont.)

Duties,* General Competencies,** and Specific Competencies***	Relative Importance						Weighted Mean
	Essential	Important	Of Some Importance	Not Important	Does Not Apply	Did Not Respond	
1. Explain the importance of cleanliness and disinfectants.	25	18	3	0	0	0	3.48
2. Check temperature, pulse, and breathing rate.	23	18	4	1	0	0	3.37
3. Use first aid to treat injuries.	21	22	3	0	0	0	3.39
4. Utilize sanitation in breeding and foaling.	31	13	2	0	0	0	3.68
5. Mix recommended dusts, sprays, and dips conforming to manufacturer's label directions and legal requirements.	16	22	6	1	0	1	3.18
6. Use chemicals safely.	22	19	3	0	0	2	3.43
B. Recognize symptoms of common equine diseases.	*27*	*10*	*2*	*0*	*0*	*7*	*3.64*
C. Apply parasite and disease control program.	*66*	*74*	*23*	*10*	*6*	*5*	*3.30*
1. Plan and conduct an immunization program with the local veterinarian.	17	21	4	2	1	1	3.13
2. Plan and conduct a parasite control program with the local veterinarian.	20	18	4	2	1	1	3.20
3. Describe and maintain quarantines and erradication programs.	12	19	8	3	2	2	2.82
4. Describe and control the causes of infectious and noninfectious diseases.	17	16	7	3	2	1	2.96
D. Develop veterinary-client relationship.	*54*	*54*	*13*	*6*	*5*	*6*	*3.11*
1. Determine client limitations for treating horses.	22	18	2	2	1	1	3.29
2. Comply with legal and contractual requirements controlling treatment.	17	19	3	2	2	3	3.09
3. Discuss medication of racing and performance horses.	15	17	8	2	2	2	2.93
V. Installing, Maintaining, and Repairing Horse Farm Buildings, Equipment, and Training Facilities	*266*	*616*	*483*	*220*	*104*	*105*	*2.43*

(Table No. 1, cont.)

*Duties,** *General Competencies,*** and Specific Competencies****	Relative Importance						Weighted Mean
	Essential	Important	Of Some Importance	Not Important	Does Not Apply	Did Not Respond	
A. *Evaluate horse farm buildings.*	26	109	64	20	3	8	2.61
1. Compare and contrast characteristics of different types of horse farm buildings.	6	21	13	4	0	2	2.66
2. Determine the requisites of the horse barn.	5	27	8	4	0	2	2.75
3. Examine advantages and disadvantages of prefabricated buildings.	1	17	22	4	1	1	2.29
4. Compare and contrast materials for construction.	2	20	17	5	1	1	2.38
5. Plan for feed and water facilities.	12	24	4	3	1	2	2.98
B. *Apply environmental control practices.*	11	56	74	19	6	18	2.28
1. Calculate heat production of horses.	3	11	19	7	2	4	2.14
2. Identify methods of compensating for moisture production from horses.	0	15	19	5	2	5	2.15
3. Apply recommended physical environmental control for horses.	2	14	20	4	1	5	2.29
4. Comply with sanitation and zoning requirements.	6	16	16	3	1	4	2.55
C. *Recommend requirements for a stall, hallway or alleyway, and tack room.*	22	133	71	32	6	12	2.50
1. Evaluate characteristics of a stall floor.	5	25	10	4	1	1	2.64
2. Recognize importance of concrete footing.	1	25	12	5	1	2	2.45
3. Select size and height of stall.	9	19	10	5	1	2	2.68
4. Develop plans for stall partitions and interiors.	4	21	12	6	1	2	2.48
5. Describe requirements for a hallway or alleyway.	2	22	12	7	1	2	2.39
6. Identify requirements for a tack room.	1	21	15	5	1	3	2.37
D. *Construct farm buildings.*	13	29	30	12	4	4	2.40

(Table No. 1, cont.)

Duties,* General Competencies,** and Specific Competencies***	Relative Importance						Weighted Mean
	Essential	Important	Of Some Importance	Not Important	Does Not Apply	Did Not Respond	
1. Plan for building and area arrangement.	8	13	16	6	2	1	2.42
2. Select the location for construction.	5	16	14	6	2	3	2.36
E. *Practice fire prevention methods.*	26	11	2	1	0	6	3.55
F. *Discuss procedures to follow during fire.*	20	15	2	1	0	8	3.42
G. *Select, maintain, and repair horse equipment.*	50	85	72	10	4	9	2.76
1. Select hay racks and mangers.	7	18	14	3	1	3	2.69
2. Select grain containers.	8	19	13	3	1	2	2.68
3. Prepare mineral boxes.	8	15	19	2	1	1	2.60
4. Examine miscellaneous horse equipment.	11	13	17	2	1	2	2.70
5. Maintain and repair horse tack and equipment.	16	20	9	0	0	1	3.16
H. *Build fences.*	23	50	17	0	0	2	3.07
1. Evaluate fencing materials relevant to use.	11	25	9	0	0	1	3.04
2. Construct, maintain, and repair horse fences.	12	25	8	0	0	1	3.09
I. *Plan, install, maintain, and repair a water system for horse farm buildings.*	37	88	65	51	22	13	2.25
1. Estimate water requirements.	9	20	6	5	3	3	2.63
2. Determine the best source of safe water.	9	19	8	5	3	2	2.59
3. Select pump capacity and type.	8	10	13	9	4	2	2.20
4. Calculate for and select type and size water storage system.	5	12	14	9	4	2	2.11
5. Select pipe, fittings, and valves.	2	11	14	12	5	2	1.84
6. Install, maintain, and repair water system using safety precautions.	4	16	10	11	3	2	2.16
J. *Install, maintain, and repair electrical wiring and demonstrate electrical safety.*	38	40	86	74	59	25	1.74

(Table No. 1, cont.)

Duties,* General Competencies,** and Specific Competencies***	Relative Importance						Weighted Mean
	Essential	Important	Of Some Importance	Not Important	Does Not Apply	Did Not Respond	
1. Determine wire size and type.	5	4	14	10	9	4	1.67
2. Select electric controls.	4	4	15	11	8	4	1.64
3. Design the wiring system by determining number and types of circuits.	4	5	12	12	10	3	1.56
4. Install fused distribution panel or circuit breaker.	7	3	12	11	10	3	1.67
5. Ground equipment.	6	7	11	11	8	3	1.81
6. Protect motors.	5	10	12	8	7	4	1.95
7. Install wiring system using safety precautions.	7	7	10	11	7	4	1.90
VI. Grooming, Leg, and Hoof Care for the Horse	*144*	*128*	*56*	*16*	*9*	*15*	*3.08*
A. Groom the horse.	*53*	*52*	*19*	*8*	*3*	*3*	*3.07*
1. Identify equipment used.	23	18	3	1	1	0	3.33
2. Compare methods of trimming for different breeds and show classes.	16	19	5	4	1	1	3.00
3. Apply methods of trimming for different breeds and show classes.	14	15	11	3	1	2	2.86
B. Care for the horse's limbs and hooves.	*91*	*76*	*37*	*8*	*6*	*12*	*3.09*
1. Describe anatomy of the limbs and hooves.	23	15	5	1	0	2	3.36
2. Recognize damage and/or unsoundness of the limbs and hooves.	29	13	1	1	0	2	3.59
3. Correct damage and/or unsoundness of the limbs and hooves.	16	18	5	1	4	2	2.93
4. Trim the horse's hooves.	14	16	12	2	0	2	2.95
5. Describe techniques of horse shoeing.	9	14	14	3	2	4	2.60
VII. Training and Handling Horses	*415*	*249*	*58*	*19*	*10*	*31*	*3.38*
A. Handle horses safely.	*35*	*5*	*0*	*0*	*0*	*6*	*3.88*
B. Apply handling techniques according to age, size, sex, and temperament.	*55*	*61*	*10*	*3*	*1*	*8*	*3.28*
1. Explain basic horse psychology.	18	20	3	2	0	3	3.26

(Table No. 1, cont.)

*Duties,** *General Competencies,*** and Specific Competencies****	Relative Importance						Weighted Mean
	Essential	Important	Of Some Importance	Not Important	Does Not Apply	Did Not Respond	
2. Recognize physical characteristics related to temperament and disposition.	17	22	4	1	0	2	3.25
3. Utilize restraining techniques.	20	19	3	0	1	3	3.33
C. *Ground train the horse.*	*104*	*48*	*17*	*7*	*4*	*4*	*3.34*
1. Halter break the horse.	31	10	2	2	1	0	3.48
2. Longe the horse.	21	10	8	4	1	2	3.05
3. Train the horse to load for transporting.	28	14	3	0	1	0	3.48
4. Comply with legal requirements and safety practices when hauling horses.	24	14	4	1	1	2	3.34
D. *Train the horse to drive and/or ride.*	*73*	*67*	*23*	*9*	*5*	*7*	*2.84*
1. Ground drive the horse.	16	17	6	3	1	3	3.02
2. Green break the horse to harness and/or saddle.	19	18	5	2	1	1	3.16
3. Train and condition the horse for work according to age, breed, and use.	18	17	6	2	1	2	3.11
4. Train and condition the horse for competition according to age, breed, and use.	20	15	6	2	2	1	3.09
E. *Care for horse after work.*	*148*	*68*	*8*	*0*	*0*	*6*	*3.63*
1. Cool the horse.	31	14	1	0	0	0	3.65
2. Feed and water the horse.	34	11	1	0	0	0	3.72
3. Observe the horse for complication.	30	14	1	0	0	1	3.64
4. Recognize need for bandaging.	28	14	3	0	0	1	3.56
5. Apply bandage.	25	15	2	0	0	4	3.55
VIII. *Exhibiting the Horse.*	55	51	21	7	0	4	3.15
A. *Prepare for competition.*	55	51	21	7	0	4	3.15
1. Groom the horse for competition.	25	16	3	1	0	1	3.44
2. Explain rules and entry requirements for competition.	16	16	10	3	0	1	3.00
3. Compare and contrast types of competition.	14	19	8	3	0	2	3.00

(Table No. 1, cont.)

Duties,* General Competencies,** and Specific Competencies***	Relative Importance						Weighted Mean
	Essential	Important	Of Some Importance	Not Important	Does Not Apply	Did Not Respond	
IX. *Breeding Horses*	378	269	95	22	3	15	3.30
A. *Compare methods of breeding horses.*	85	98	64	18	2	9	2.92
1. Describe genetic principles.	10	15	11	6	2	2	2.57
2. Name and describe the breeding organs of the stallion and mare.	14	20	12	0	0	0	3.04
3. Describe hand mating.	14	16	13	1	0	2	2.97
4. Discuss advantages and disadvantages of artificial insemination.	15	13	12	4	0	2	2.89
5. Discuss natural mating in confinement or pasture.	15	16	10	3	0	2	2.98
6. Explain the systems of breeding.	17	18	6	4	0	1	3.07
B. *Plan a breeding program.*	94	64	19	3	1	3	3.36
1. Identify breeding habits and peculiarities of the mare.	25	15	4	0	1	1	3.40
2. Determine estrus cycle of the mare.	28	15	3	0	0	0	3.54
3. Determine breeding season and foaling period.	23	18	5	0	0	0	3.39
4. Compare stallion age, breeding method, and number of mares to breed.	18	16	7	3	0	2	3.11
C. *Apply a breeding program.*	199	107	12	1	0	3	3.58
1. Care for the mare and stallion prior to and during breeding season.	28	17	1	0	0	0	3.59
2. Care for the foal during breeding.	29	15	1	0	0	1	3.62
3. Utilize breeding techniques.	25	16	4	0	0	1	3.47
4. Prepare the mare for foaling.	25	18	1	1	0	1	3.49
5. Assist the mare during foaling if needed.	31	12	3	0	0	0	3.61
6. Care for the mare following foaling.	29	16	1	0	0	0	3.61
7. Care for the new born foal.	32	13	1	0	0	0	3.67
X. *Buying and Selling Horses*	154	310	125	81	60	52	2.57
A. *Compare and contrast methods of marketing horses.*	41	113	63	23	19	17	2.52

(Table No. 1, cont.)

*Duties,** *General Competencies,*** and Specific Competencies****	Relative Importance						Weighted Mean
	Essential	Important	Of Some Importance	Not Important	Does Not Apply	Did Not Respond	
1. Describe salesmanship techniques in marketing.	8	20	9	4	3	2	2.59
2. Evaluate private treaty sales.	7	18	12	4	3	2	2.50
3. Appraise production sales.	6	18	10	4	3	5	2.49
4. Recognize advantages and disadvantages of association sales.	7	19	10	4	3	3	2.53
5. Rate advantages and disadvantages of area horse sales.	6	18	13	3	3	3	2.49
6. Develop an advertising program.	7	20	9	4	4	2	2.50
B. Select markets.	*4*	*12*	*4*	*6*	*2*	*18*	*2.36*
C. Determine market value.	*65*	*105*	*20*	*18*	*16*	*6*	*2.83*
1. Investigate pedigree.	10	23	6	4	3	0	2.72
2. Check for soundness and conformation.	21	16	3	2	3	1	3.11
3. Determine age.	12	21	5	4	3	1	2.78
4. Rate performance.	9	25	4	4	4	0	2.67
5. Evaluate money making ability.	13	20	2	4	3	4	2.86
D. Determine financing methods.	*44*	*80*	*38*	*34*	*23*	*11*	*2.40*
1. Compare and contrast types of credit.	7	17	8	7	5	2	2.32
2. Consider credit factors as a lender.	6	18	8	7	5	2	2.30
3. Consider credit factors as a borrower.	5	18	8	7	5	3	2.26
4. Build and maintain a good credit rating.	18	11	6	6	4	1	2.82
5. Calculate interest.	8	16	8	7	4	3	2.40
XI. Maintaining Records Required for Horse Production	*229*	*336*	*141*	*122*	*55*	*37*	*2.64*
A. Develop a record keeping system peculiar to the horse farm.	*95*	*134*	*28*	*34*	*17*	*14*	*2.83*
1. Compare accounting methods.	8	18	9	7	2	2	2.52
2. Determine income and expenses.	13	20	2	6	3	2	2.77
3. Compare methods of depreciation.	8	21	6	6	3	2	2.57
4. Calculate depreciation.	7	21	5	7	3	3	2.51
5. Prepare inventory statement.	8	23	4	6	3	2	2.61
6. Maintain breeding and foaling records.	27	16	0	1	1	1	3.49

(Table No. 1, cont.)

*Duties,** *General Competencies,*** and Specific Competencies****	Relative Importance						Weighted Mean
	Essential	Important	Of Some Importance	Not Important	Does Not Apply	Did Not Respond	
7. Maintain horse registration forms.	24	15	2	1	2	2	3.32
B. Develop a budget for the horse farm.	*28*	*70*	*31*	*35*	*12*	*8*	*2.38*
1. Compare budgeting systems.	6	19	7	9	3	2	2.36
2. Obtain financial information needed for budget development.	10	15	8	9	3	1	2.44
3. Develop cash flow analysis.	8	17	9	7	3	2	2.45
4. Select lease, rent, or purchase option for projected expansion.	4	19	7	10	3	3	2.26
C. Compute taxes peculiar to the horse farm.	*20*	*34*	*17*	*9*	*8*	*4*	*2.56*
1. Determine deductible items on tax report.	11	17	7	5	4	2	2.59
2. Discuss social security and workman's compensation laws.	9	17	10	4	4	2	2.52
D. Develop an insurance plan for horse farm.	*29*	*45*	*27*	*20*	*11*	*6*	*2.46*
1. Determine owner's liability.	13	12	9	7	4	1	2.51
2. Estimate horse and farm value.	10	16	8	7	3	2	2.52
3. Describe mortality and loss of use insurance.	6	17	10	6	4	3	2.35
E. Mark the horse for identification.	*57*	*53*	*38*	*24*	*7*	*5*	*2.72*
1. Comply with legal requirements.	22	11	5	6	2	0	2.98
2. Compare marking methods used for different breeds and organizations.	11	15	11	7	2	0	2.57
3. Select methods of marking.	11	13	13	7	2	0	2.52
4. Apply marking methods.	13	14	9	4	1	5	2.83

Specific competencies are fundamental elements used in developing a curriculum for horse production. It is essential, then, that curriculum developers incorporate those competencies deemed most important to employability into the curriculum. The decision to include or not to include a specific competency in the curriculum is based on many inputs, one of which

is the relative importance of each competency considered along with the time available for instruction.

Table No. 2 is a rank order of relative importance of one hundred sixty-seven specific competencies and 5 general competencies for horse production with the weighted mean for each. The 5 general competencies are included because no specific competencies were developed for them; thus the independent general competencies in this case can be viewed as specific competencies. It should be noted that only one of the 5 had responses in the "does not apply" category, indicating that those general competencies are useful as specific competencies in ranking importance.

Table No. 2. Rank Order of 167 Specific Competencies and 5 Independent *General* Competencies for Horse Production.

Rank	Specific Competency or *General Competency* No.	Specific or *General* Competency	Weighted Mean
1	*VII. A.*	*Handle horses safely.*	*3.88*
2	VII. E. 2.	Feed and water the horse.	3.72
3	IX. C. 7.	Care for the new born foal.	3.67
4	VII. E. 1.	Cool the horse.	3.65
5	*IV. B.*	*Recognize symptoms of common equine diseases.*	*3.64*
6	VII. E. 3.	Observe the horse for complication.	3.64
7	IV. A. 4.	Utilize sanitation in breeding and foaling.	3.63
8	IX. C. 2.	Care for the foal during breeding.	3.62
9	IX. C. 5.	Assist the mare during foaling if needed.	3.61
10	IX. C. 6.	Care for the mare following foaling.	3.61
11	VI. B. 2.	Recognize damage and/or unsoundness of the limbs and hooves.	3.59
12	IX. C. 1.	Care for the mare and stallion prior to and during breeding season.	3.59
13	VII. E. 4.	Recognize need for bandaging.	3.56
14	*V. E.*	*Practice fire prepention methods.*	*3.55*
15	VII. E. 5.	Apply bandage.	3.55
16	IX. B. 2.	Determine estrus cycle of the mare.	3.54
17	IX. C. 4.	Prepare the mare for foaling.	3.49
18	XI. A. 6.	Maintain breeding and foaling records.	3.49
19	IV. A. 1.	Explain the importance of cleanliness and disinfectants.	3.48

(Table No. 2, cont.)

Rank	Specific Competency or *General Competency* No.	Specific and *General* Competency	Weighted Mean
20	VII. C. 1.	Halter break the horse.	3.48
21	VII. C. 3.	Train the horse to load for transporting.	3.48
22	IX. C. 3.	Utilize breeding techniques.	3.47
23	I. D. 2.	Recognize inherited and acquired soundness and unsoundness in horses.	3.46
24	VIII. A. 1.	Groom the horse for competition.	3.44
25	II. C. 2.	Apply feeding practices.	3.43
26	IV. A. 6.	Use chemicals safely.	3.43
27	*V. F.*	*Discuss procedures to follow during fire.*	3.42
28	IX. B. 1.	Identify breeding habits and peculiarities of the mare.	3.40
29	IV. A. 3.	Use first aid to treat injuries.	3.39
30	IX. B. 3.	Determine breeding season and foaling period.	3.39
31	IV. A. 2.	Check temperature, pulse, and breathing rate.	3.37
32	VI. B. 1.	Describe anatomy of the limbs and hooves.	3.36
33	VII. C. 4.	Comply with legal requirements and safety practices when hauling horses.	3.34
34	VI. A. 1.	Identify equipment used.	3.33
35	VII. B. 3.	Utilize restraining techniques.	3.33
36	XI. A. 7.	Maintain horse registration forms.	3.32
37	IV. D. 1.	Determine client limitations for treating horses.	3.29
38	VII. B. 1.	Explain basic horse psychology.	3.26
39	VII. B. 2.	Recognize physical characteristics related to temperament and disposition.	3.25
40	I. C. 1.	Recognize physical characteristics (general anatomy) important to use.	3.20
41	IV. C. 2.	Plan and conduct a parasite control program with the local veterinarian.	3.20
42	I. D. 1.	Recognize physical characteristics (general anatomy) important to use.	3.19
43	IV. A. 5.	Mix recommended dusts, sprays, and dips conforming to manufacturer's label directions and legal requirements.	3.18
44	V. G. 5.	Maintain and repair horse tack and equipment.	3.16
45	VII. D. 2.	Green break the horse to harness and/or saddle.	3.16
46	IV. C. 1.	Plan and conduct an immunization program with the local veterinarian.	3.13
47	VII. D. 3.	Train and condition the horse for work according to age, breed, and use.	3.11
48	IX. B. 4.	Compare stallion age, breeding method, and number of mares to breed.	3.11
49	X. C. 2.	Check for soundness and conformation.	3.11

(Table No. 2, cont.)

Rank	Specific Competency or *General* Competency No.	Specific and *General* Competency	Weighted Mean
50	II. D. 1.	Recognize role of social order in feeding horses.	3.09
51	IV. D. 2.	Comply with legal and contractual requirements controlling treatment.	3.09
52	V. H. 2.	Construct, maintain, and repair horse fences.	3.09
53	VII. D. 4.	Train and condition the horse for work according to age, breed, and use.	3.09
54	IX. A. 6.	Explain the systems of breeding.	3.07
55	VII. C. 2.	Longe the horse.	3.05
56	V. H. 1.	Evaluate fencing materials relevant to use.	3.04
57	IX. A. 2.	Name and describe the breeding organs of the stallion and mare.	3.04
58	II. A. 1.	Determine protein needs of the different classes or types (sex, age and use) of horses.	3.02
59	VII. D. 1.	Ground drive the horse.	3.02
60	II. B. 1.	Identify froms of feed nutrients from available roughages.	3.00
61	VI. A. 2.	Compare methods of trimming for different breeds and show classes.	3.00
62	VIII. A. 2.	Explain rules and entry requirements for competition.	3.00
63	VIII. A. 3.	Compare and contrast types of competition.	3.00
64	II. A. 2.	Determine energy needs of the different classes or types (sex, age, and use) of horses.	2.98
65	V. A. 5.	Plan for feed and water facilities.	2.98
66	IX. A. 5.	Discuss natural mating in confinement or pasture.	2.98
67	XI. E. 1.	Comply with legal requirements.	2.98
68	IX. A. 3.	Describe hand mating.	2.97
69	IV. C. 4.	Describe and control the causes of infectious and noninfectious diseases.	2.96
70	II. A. 3.	Determine mineral needs of the different classes or types (sex, age, and use) of horses.	2.95
71	II. B. 2.	Evaluate feed nutrients from available roughages.	2.95
72	II. B. 3.	Identify forms of feed nutrients from available concentrates.	2.95
73	II. C. 2.	Select and purchase feeds to be used in the ration.	2.95
74	VI. B. 4.	Trim the horse's hooves.	2.95
75	II. C. 1.	Formulate rations using economical ingredients.	2.93
76	II. C. 3.	Mix feeds.	2.93
77	IV. D. 3.	Discuss medication of racing and performance horses.	2.93
78	VI. B. 3.	Correct damage and/or unsoundness of the limbs and hooves.	2.93

(Table No. 2, cont.)

Rank	Specific Competency or *General Competency* No.	Specific and *General* Competency	Weighted Mean
79	I. D. 5.	Discuss the importance of a veterinarian soundness examination.	2.91
80	II. B. 4.	Evaluate feed nutrients available from available concentrates.	2.89
81	IX. A. 4.	Discuss advantages and disadvantages of artificial insemination.	2.89
82	I. C. 2.	Evaluate physical characteristics important to breeds and classes.	2.87
83	II. A. 4.	Determine vitamin needs of the different classes or types (sex, age, and use) of horses.	2.86
84	VI. A. 3.	Apply methods of trimming for different breeds and show classes.	2.86
85	X. C. 5.	Evaluate money making ability.	2.86
86	III. B. 2.	Maintain fertility and stand.	2.85
87	XI. E. 4.	Apply marking methods.	2.83
88	IV. C. 3.	Describe and maintain quarantines and eradication programs.	2.82
89	X. D. 4.	Build and maintain a good credit rating.	2.82
90	III. B. 3.	Identify and control unwanted plants.	2.80
91	X. C. 3.	Determine age.	2.78
92	XI. A. 2.	Determine income and expenses.	2.77
93	III. A. 2.	Compare grasses and/or legumes adapted to local area.	2.75
94	V. A. 2.	Determine the requisites of the horse barn.	2.75
95	III. A. 1.	Describe characteristics of grasses and legumes.	2.73
96	III. B. 1.	Select grazing system.	2.73
97	X. C. 1.	Investigate pedigree.	2.72
98	I. D. 3.	Evaluate pedigree.	2.70
99	V. G. 4.	Examine miscellaneous horse equipment.	2.70
100	V. G. 1.	Select hay racks and mangers.	2.69
101	V. C. 3.	Select size and height of stall.	2.68
102	V. G. 2.	Select grain containers.	2.68
103	III. A. 7.	Establish selected grasses and/or legumes.	2.67
104	X. C. 4.	Rate performance.	2.67
105	V. A. 1.	Compare and contrast characteristics of different types of horse farm buildings.	2.66
106	III. A. 4.	Select grasses and/or legumes best adapted to your soil conditions.	2.64
107	V. C. 1.	Evaluate characteristics of a stall floor.	2.64
108	V. I. 1.	Estimate water requirements.	2.63
109	III. A. 3.	Select area to be improved.	2.62
110	XI. A. 5.	Prepare inventory statement.	2.61
111	V. G. 3.	Prepare mineral boxes.	2.60

(Table No. 2, cont.)

Rank	Specific Competency or *General Competency* No.	Specific or *General* Competency	Weighted Mean
112	VI. B. 5.	Describe techniques of horse shoeing.	2.60
113	V. I. 2.	Determine the best source of safe water.	2.59
114	X. A. 1.	Describe salesmanship techniques in marketing.	2.59
115	XI. C. 1.	Determine deductible items on tax report.	2.59
116	IX. A. 1.	Describe genetic principles.	2.57
117	XI. A. 3.	Compare methods of depreciation.	2.57
118	XI. E. 2.	Compare marking methods used for different breeds and organizations.	2.57
119	V. B. 4.	Comply with sanitation and zoning requirements.	2.55
120	I. A. 1.	Compare and contrast riding horses, racehorses, and light harness horses.	2.54
121	X. A. 4.	Recognize advantages and disadvantages of association sales.	2.53
122	XI. A. 1.	Compare accounting methods.	2.52
123	XI. C. 2.	Discuss social security and workmen's compensation laws.	2.52
124	XI. D. 2.	Estimate horse and farm value.	2.52
125	XI. E. 3.	Select methods of marking.	2.52
126	XI. A. 4.	Calculate depreciation.	2.51
127	XI. D. 1.	Determine owner's liability.	2.51
128	X. A. 2.	Evaluate private treaty sales.	2.50
129	X. A. 6.	Develop an advertising program.	2.50
130	X. A. 3.	Appraise production sales.	2.49
131	X. A. 5.	Rate advantages and disadvantages of area horse sales.	2.49
132	V. C. 4.	Develop plans for stall partitions and interiors.	2.48
133	I. C. 4.	Apply rules of horse show classes.	2.46
134	V. C. 2.	Recognize importance of concrete footings.	2.45
135	XI. B. 3.	Develop cash flow analysis.	2.45
136	I. D. 4.	Evaluate performance and show-ring winnings.	2.44
137	XI. B. 2.	Obtain financial information needed for budget development.	2.44
138	V. D. 1.	Plan for building and area arrangement.	2.42
139	X. D. 5.	Calculate interest.	2.40
140	I. C. 3.	Identify classes of a horse show.	2.39
141	V. C. 5.	Describe requirements for a hallway or alleyway.	2.39
142	V. A. 4.	Compare and contrast materials for construction.	2.38
143	V. C. 6.	Identify requirements for a tack room.	2.37
144	V. D. 2.	Select the location for construction.	2.36
145	X. B.	*Select markets.*	2.36
146	XI. B. 1.	Compare budgeting systems.	2.36
147	XI. D. 3.	Describe mortality and loss of use insurance.	2.35
148	X. D. 1.	Compare and contrast types of credit.	2.32
149	III. A. 5.	Take soil samples.	2.30

(Table No. 2, cont.)

Rank	Specific Competency or *General Competency* No.	Specific or *General* Competency	Weighted Mean
150	X. D. 2.	Consider credit factors as a lender.	2.30
151	III. A. 6.	Interpret soil test results specifically for pasture production.	2.29
152	V. A. 3.	Examine advantages and disadvantages of prefabricated building.	2.29
153	V. B. 3.	Apply recommended physical environmental control for horses.	2.29
154	X. D. 3.	Consider credit factors as a borrower.	2.26
155	XI. B. 4.	Select lease, rent, or purchase option for projected expansion.	2.26
156	I. B. 1.	Determine age of horse by examining teeth.	2.20
157	V. I. 3.	Select pump capacity and type.	2.20
158	V. I. 6.	Install, maintain, and repair water system using safety precautions.	2.16
159	V. B. 2.	Identify methods of compensating for moisture production from horses.	2.15
160	V. B. 1.	Calculate heat production of horses.	2.14
161	I. B. 3.	Measure horse's body to determine height and weight.	2.11
162	V. I. 4.	Calculate for and select type and size water storage system.	2.11
163	V. J. 6.	Protect motors.	1.95
164	V. J. 7.	Install wiring system using safety precautions.	1.90
165	I. B. 2.	Apply the use of a balance scale for determining weight of a horse.	1.85
166	V. I. 5.	Select pipe, fittings, and valves.	1.84
167	V. J. 5.	Ground equipment.	1.81
168	V. J. 1.	Determine wire size and type.	1.67
169	V. J. 4.	Install fused distribution panel or circuit breaker.	1.67
170	V. J. 2.	Select electric controls.	1.64
171	V. J. 3.	Design the wiring system by determining number and types of circuits.	1.56
172	I. A. 2.	Compare and contrast draft horses and mules.	1.51

It should be noted that the specific competencies developed and validated by this study serve as only one part of a much broader effort. As mentioned earlier, the specific competencies are fundamental elements used in developing a curriculum for horse production. It was the intent of the National Agribusiness Manpower Project that the competencies developed for agribusiness

occupations be used in curriculum development. This intent was expressed as the objective of "developing educational and training programs with appropriate curricula relevant to the needs of agribusiness occupations." (1:2) Appendix D highlights examples of curriculum materials developed to support one of the specific competencies validated by this study.

Although not a part of the objectives of this study, it seemed evident that a possible outcome of the study could be a job description for entry and first advancement levels of employment in horse production. The duties can be used to describe broadly those activities engaged in by horse production employees. Appendix E is a job description for entry and first advancement level employees in horse production. The reader is cautioned, however, that at present the horse production industry lacks the formalized structure exsisting in other industries and governmental agencies. This structure has, through union agreements, production line technology, and government regulations, resulted in jobs being defined with great specificity. Many factors, such as geographical location and size of farm operation, in addition to the absence of a formalized structure contribute to the wide variation in tasks performed by horse production employees. The reader is again cautioned that due to the wide variation in the horse production industry, this job description may not be completely relevant for a particular individual or geographical location. An example would be the competencies relating to exhibiting the horse on a farm in a geographical location where horses are not shown as part of the employees normal activities.

SELECTED REFERENCES

1. Economic Research Service, Employment in Agricultural and Agribusiness Occupations, Economic Research Service, United States Department of Agriculture, in cooperation with Bureau of the Census, U.S. Department of Commerce; Office of Education, U.S. Department of Health, Education, and Welfare and Manpower Administration and Bureau of Labor Statistics, U.S. Department of Labor; Series ERS-570; August, 1974.

2. Ensminger, M. E., The Stockman's Handbook, The Interstate Printers and Publishers, Inc., 1970.

3. Ensminger, M. E., Horses and Horsemanship, The Interstate Printers and Publishers, Inc., 1969.

4. Fritsch, Conrad F., Agricultural Employment and Training Needs in Texas, 1975-79, The Agricultural Experiment Station, Department of Agricultural Economics, Texas A&M University, 1974.

5. Fritsch, C. F. and L. R. Lorenz, Employment and Training Needs in Texas Agribusiness, Texas Agricultural Experiment Station, Department of Agricultural Economics, Texas A&M University, December, 1973.

6. Moss, Pete, How to Ride and Train the Western Horse, Beery School of Horsemanship, Pleasant Hill, Ohio, 1967.

7. Vocational Instructional Services, Horse Farm Employee, Vocational Instructional Services, Department of Agricultural Education, Texas A&M University, 1969.

APPENDIX A

Horse Production

Advisory and Validating Committees From Texas

HORSE PRODUCTION
ADVISORY COMMITTEE

Mike and Millie Leonard
M & M Ranch
Milford, Texas 76670

Barry Rudd
P.O. Drawer A
Waskom, Texas 75692

Tex Rogers, Editor
Horseman Magazine
5314 Bingle Road
Houston, Texas 77018

Danny Urschel
RD #3
Canadian, Texas 79014

Ernest Turner
Rancho Del Caballo
RD #1, Box 10 J
San Marcos, Texas 78666

University Personnel

John Holcomb
Professor (Project Director)
Agricultural Education Department
Texas A&M University
College Station, Texas 77843

William Hudson
Research Associate
Agricultural Education Department
Texas A&M University
College Station, Texas 77843

Charles Palmer
Subject Matter Specialist
Vocational Instructional Services
F.E. Box 182
College Station, Texas 77843

Tom Grady
Research Assistant
Agricultural Education Department
Texas A&M University
College Station, Texas 77843

Richard Montgomery
Research Assistant
Agricultural Education Department
Texas A&M University
College Station, Texas 77843

Craig Morton
Research Assistant
Agricultural Education Department
Texas A&M University
College Station, Texas 77843

HORSE PRODUCTION
VALIDATING COMMITTEE

Billy Steele
RD #1, Box 3
Pinehurst, Texas 77362

Dr. Bill Jackson
Box 1177
Stephenville, Texas 76401

W. W. Morrow
RD #5, Box 273 A
Longview, Texas 75601

Ken Cromwell
Animal Science Department
Texas A&M University
College Station, Texas 77843

Dr. Ed Murry
P.O. Box 277
Spur, Texas 79370

Tom Gibbs
Rt. 3, Box 885
Wichita Falls, Texas 76308

Jack Fambro
Box 1083
Breckenridge, Texas 76024

University Personnel

John Holcomb
Professor (Project Director)
Agricultural Education Department
Texas A&M University
College Station, Texas 77843

William Hudson
Research Associate
Agricultural Education Department
Texas A&M University
College Station, Texas 77843

Charles Palmer
Subject Matter Specialist
Vocational Instructional Services
F.E. Box 182
College Station, Texas 77843

Tom Grady
Research Assistant
Agricultural Education Department
Texas A&M University
College Station, Texas 77843

Richard Montgomery
Research Assistant
Agricultural Education Department
Texas A&M University
College Station, Texas 77843

Craig Morton
Research Assistant
Agricultural Education Department
Texas A&M University
College Station, Texas 77843

APPENDIX B

Ten Leading Horse Production States
And Number of Responses From Each

Participants for the national validation phase of the study were identified as outstanding horse producers by state directors of agricultural education in nine of ten leading states for production. In addition to their leadership positions in horse production, these additional factors contirbuted to the selection of the states listed below:

1. These states are distributed throughout the United States.
2. Their total production is a major portion of the horses produced in the United States.
3. Virtually all circumstances under which horses can be raised in the United States are found in these states.

Ten Leading Horse Production States - 1969 Census of Agriculture

	State	Number of Horses	Number of Responses
1.	Texas	220,054	13*
2.	California	96,930	3
3.	Missouri	87,661	0
4.	Oklahoma	85,661	7
5.	Kentucky	79,316	12
6.	Iowa	77,795	0
7.	Tennessee	76,902	1
8.	Ohio	76,674	6
9.	Illinois	72,501	11
10.	Montana	70,054	6

*Number of people who served on the Texas advisory and validating committees.

APPENDIX C

Rank Order of Horse Production
Duties with Component General Competencies
Rank Ordered within the Duty

VII. Training and Handling Horses
- A. Handle horses safely.
- E. Care for the horse after work.
- C. Ground train the horse.
- B. Apply handling techniques according to age, size, sex, and temperament.
- D. Train the horse to drive and/or ride.

IX. Breeding Horses
- C. Apply a breeding program.
- B. Plan a breeding program.
- A. Compare methods of breeding horses.

IV. Controlling Parasites, Diseases, and Injuries
- B. Recognize symptoms of common equine diseases.
- A. Apply sanitation and health practices.
- D. Develop veterinary-client relationship.
- C. Apply parasite and disease control program.

VIII. Exhibit the Horse
- A. Prepare for competition.

VI. Grooming, Leg, and Hoof Care for the Horse
- B. Care for the horse's limbs and hoof.
- A. Groom the horse.

II. Feeding Horses
- D. Feed horses.
- A. Calculate nutritive requirements of horses.
- B. Evaluate sources of nutrients.
- C. Prepare feed rations.

III. Managing Pastures
- B. Use pastures.
- A. Improve pastures.

IX. Maintaining Records Required for Horse Production
- A. Develop a record keeping system peculiar to the horse farm.
- E. Mark the horse for identification.
- C. Compute taxes peculiar to the horse farm.
- D. Develop an insurance plan for the horse farm.
- B. Develop a budget for the horse farm.

X. Buying and Selling Horses
- C. Determine market value.
- A. Compare and contrast methods of marketing horses.
- D. Determine financing methods.
- B. Select markets.

I. Classifying and Selecting Horses
- D. Select horses.
- C. Judge horses.
- B. Determine age, weight, and height.
- A. Identify the major breeds of horses by classes and types.

V. Installing, Maintaining, and Repairing Horse Farm Buildings, Equipment, and Training Facilities
   E. Practice fire prevention methods.
   F. Discuss procedures to follow during fire.
   H. Build fences.
   G. Select, maintain, and repair horse equipment
   A. Evaluate horse farm buildings.
   C. Recommend requirements for a stall, hallway or alleyway, and tackroom.
   D. Construct farm buildings.
   B. Apply environmental control practices.
   I. Plan, install, maintain, and repair a water system for horse farm buildings.
   J. Install, maintain, and repair electrical wiring and demonstrate electrical safety.

APPENDIX D

Examples of Curriculum Materials Developed to Support
A Single Horse Production Specific Competency Statement

HORSE PRODUCTION

Duty I: Classifying and Selecting Horses

General Competency C: Judge Horses

Specific Competency 2: Evaluate physical characteristics important to breeds and classes

Competencies for Selecting the Stock Horse Type

1. Identify the parts of the horse.
2. Identify the bones of the horse that are of major importance in determining correct balance and conformation of the stock horse type.
3. Describe what constitutes correct balance in the conformation of the stock horse type.
4. Describe the ideal conformation of the stock horse type as viewed from the side, front, and rear.
5. Identify the common conformation defects of the head, neck, and body, the fore legs and feet, and the hind legs and feet of the horse.
6. Describe the factors other than conformation which are of importance in the selection of the stock horse type.
7. Identify the most common ailments and lamenesses which determine the degree of soundness of the horse.

Transparency No. 4 Ideal Stock Horse Conformation

Sideview: Continuing with the sideview, the feet and legs are examined first, since the animal's utility is dependent upon their soundness. The feet should be round and proportionate in size to the body. Feet that are too large usually constitute a clumsy moving individual, whereas small feet are vulnerable to lameness. An extreme amount of concussion is exerted on the animal's foot each time it strikes in movement, therefore, the larger foot has less pressure per square inch than the smaller.

The forearm should be long and the cannon short. This combination is associated with a long sloping shoulder and a short arm or humerus, which constitutes the best assembly for shock absorption and length of stride. The cannon bones should appear flat, denoting well-developed tendons and connective tissue. The hocks should set low with length exhibited through the gaskin and shortness through the stifle, but good length in the hips.

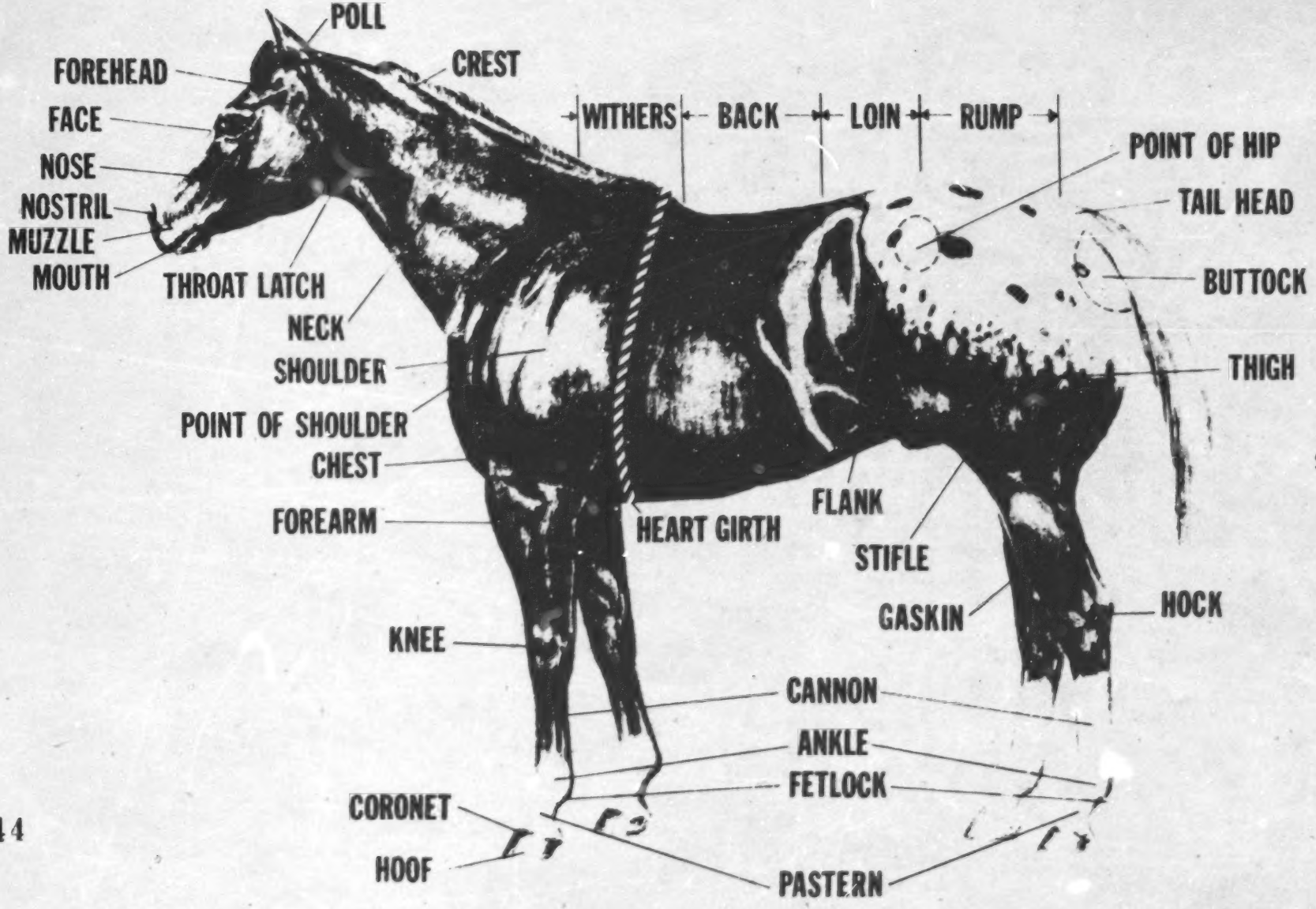
The muscling of the legs should be well-defined and of the long type. Short, bunchy muscling is usually associated with straight-shouldered, heavy-bodied individuals. Extremely long muscling is also undesirable as it constitutes a lack of strength and agility.

The legs should join the hips and shoulders, giving the appearance of belonging. The front legs should be straight down through the fetlock where it forms a 45^{0} angle into the pastern which best utilizes the bone and ligament in shock absorption. The legs should appear to be in the center of the shoulders and hips not set up under or out on the front or rear.

From the side, the shoulder should be well muscled, tapering up into well-defined withers. Round, flat, fleshy withers are usually associated with straight-shouldered, long-backed conformation. The shoulders should be clean behind as they tie into the body. The slope of the shoulders should be approximately 45^{0} with long muscling carrying up into a slender, long neck.

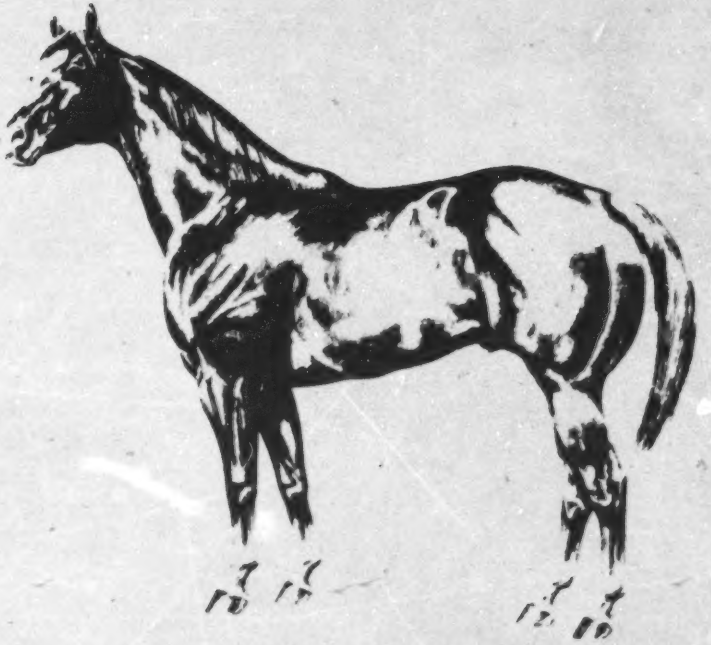
The body should appear symmetrical and exhibit well spring ribs and depth through the heart girth. A large lung capacity is essential to superior performance and stamina as the lungs are containted in this area. The flank should be clean, but not cut up, to denote freedom of movement in the hind legs. A cut up flank denotes small barrel capacity. The back should be short and especially broad and well-muscled through the loin. Since the skeletal system of the horse does not join the fore-quarters with the hind quarters other than through a vertebral column, all support is by muscle and connective tissue.

PARTS OF THE HORSE



IDEAL STOCK HORSE CONFORMATION

FRONT VIEW

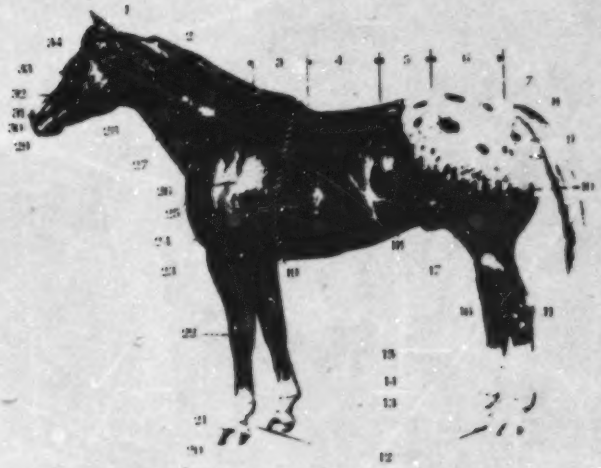


SIDE VIEW

REAR VIEW

SELECTED STUDENT ACTIVITIES

1. List the parts of the horse as identified on the animal below:



1. 19.
2. 20.
3. 21.
4. 22.
5. 23.
6. 24.
7. 25.
8. 26.
9. 27.
10. 28.
11. 29.
12. 30.
13. 31.
14. 32.
15. 33.
16. 34.
17.
18.

APPENDIX E

Horse Production Job Description

EE 008 964

Horse Production Employee - Ground trains the horse and trains the horse to drive and/or ride applying handling techniques to handle the horse safely and cares for the horse after work. Compares methods of breeding, plans and applies a breeding program. Applies sanitation and health practices, recognizes symptoms of common equine diseases and applies a parasite and disease control program by developing a veterinary client relationship. Prepares and exhibits the horse in competition. Grooms the horse caring for the horse's limbs and hooves. Calculates nutritive requirements, evaluates sources of nutrients, prepares feed rations, and feeds horses. Improves and uses pastures. Develops a horse farm record system with budgets and insurance plan to compute taxes and marks the horse for identification. Buys and sells horses comparing and contrasting marketing methods, selects market, and determines market value and financing method. Identifies major breeds and types of horses, and determines age, weight, and height to select and judge horses. Installs, maintains, and repairs horse farm buildings, water systems, electrical systems, and training facilities. Evaluates and constructs horse farm buildings and applies environmental control practices. Builds fences and recommends requirements for stalls, hallway or alleyway and tackroom. Practices fire prevention methods and follows proper procedures during fire.